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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,963

09/15/2006

Hans Adams

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EXAMINER

MAI, TIEN HUNG

ART UNIT

PAPER NUMBER

2836

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,963	Applicant(s) ADAMS ET AL.	
	Examiner TIEN MAI	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Application number 10/598963 for "Quick-Operating Valve" filed 09/15/2006 has been examined.

Information Disclosure Statement

2. The information disclosure statement filed 09/15/2006 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Nishizako et al. (US 4,661,883, "Nishizako").

5. **Regarding claim 1**, Nishizako discloses electromagnet apparatus with shortened armature release time, the apparatus (fig. 10) comprising: a coil (2) supplied by a voltage source (output voltage of a full-wave rectifier), wherein a voltage-dependent resistor (10 and 12) connected between the voltage source and the coil, and an auxiliary voltage source (capacitor 9 and resistor 8) is connected in parallel to the

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coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event (col. 2, lines 23-27).

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wolgast (US 3,397,322, "Wolgast").

7. **Regarding claim 1**, Wolgast discloses portable resistance spot welder, the apparatus (fig. 4) comprising: a coil (107) supplied by a voltage source (voltage supplies by secondary winding 73), wherein a voltage-dependent resistor (97 and 103) connected between the voltage source and the coil, and an auxiliary voltage source (diode 119) is connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event (col. 6, lines 10-12).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolgast in view of Yiannoulos (US 4,705,322, "Yiannoulos").

10. **Regarding claims 2 and 3**, Wolgast discloses the limitations as discussed above. Wolgast does not explicitly disclose the auxiliary voltage source comprising a zener diode, and the zener diode connected in series with a rectifier diode. Wolgast

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rather discloses that the auxiliary voltage source is a rectifier diode. Yiannoulos discloses in fig. 2 that adding a zener diode (20) to an existing rectifier diode (14) (as shown in fig. 1) to improve the speed of the switching action of the circuit (col. 3, lines 48-62). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Wolgast and add a zener diode, as taught by Yiannoulos, in order to improve the speed of the switching action of the circuit (col. 3, lines 48-62).

11. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolgast in view of Erickson et al. (US 6,687,553, "Erickson").

12. **Regarding claim 4**, Wolgast discloses that the voltage-dependent resistor includes an electronic switch (97), and the electronic switch bridging a resistor (103), wherein the electronic switch being driven into a closing state, i.e., non-conducting state, when a voltage supplied falls below a given switching voltage (set by zener diode 91) (col. 5, lines 50-63). Wolgast does not explicitly disclose the voltage-dependent resistor include a plurality of electronic switches connected in series in the form of a cascade, said electronic switches each bridging a series resistor. Erickson discloses a voltage-dependent resistor (fig. 4) includes a plurality of electronic switches (Q1 and Q2) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (R1 and R2) when the plurality of electronic switches are in conducting state. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Wolgast and using a group of series-connected transistors, as taught by Erickson, because such arrangement caused

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substantially reduction in voltage drop across each individual transistor; thus, preventing their breakdown in the case of over-voltage. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Wolgast and bypassing each of additional transistors by resistor, thus forming a voltage divider (R1 and R2) according to Erickson, because such arrangement guarantees substantially equal voltage drop across each transistor when they are in non-conducting state, thus preventing their breakdown in the case of over-voltage.

13. **Regarding claim 5**, Wolgast discloses that the switching voltage is determined by a reference voltage path (92).

14. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 4,649,458, "Arai") in view of Erickson.

15. **Regarding claim 1**, Arai discloses control circuits for electromagnetic coupling apparatus, the apparatus (fig. 5) comprising: a coil (L) supplied by a voltage source (B), wherein a power switch (Q2) connected between the voltage source and the coil, and an auxiliary voltage source (ZD) is connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source (in reversal voltage event of the coil).

Arai does not explicitly disclose the power switch is a voltage-dependent resistor. Erickson discloses a voltage-dependent resistor (fig. 4) includes a plurality of electronic switches (Q1 and Q2) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (R1 and R2) when the plurality of electronic

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switches are in conducting state. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Wolgast and using a group of series-connected transistors, as taught by Erickson, because such arrangement caused substantially reduction in voltage drop across each individual transistor; thus, preventing their breakdown in the case of over-voltage. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Wolgast and bypassing each of additional transistors by resistor, thus forming a voltage divider (R1 and R2) according to Erickson, because such arrangement guarantees substantially equal voltage drop across each transistor when they are in non-conducting state, thus preventing their breakdown in the case of over-voltage.

16. **Regarding claim 2**, Arai discloses that the auxiliary voltage source comprising at least one zener diode (ZD).

17. **Regarding claim 3**, Arai discloses that the auxiliary voltage source connecting in series with a rectifier diode and in parallel to the coil (see fig. 5).

18. **Regarding claim 4**, Arai discloses that the power switch being driven into the closing state, i.e., in non-conducting state, when a voltage applied falls below a given switching voltage (setting by b1 and b2) (col. 5, lines 61-64). Arai in view of Erickson discloses that the voltage-dependent resistor includes a plurality of electronic switches (Q1 and Q2) connected in series in the form of a cascade, said electronic switches each bridging a series resistors (R1 and R2).

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19. **Regarding claim 5**, Arai discloses that the switching voltage (b1 and b2) is determined by a reference voltage path (C11, C12, R11 and R12).

Allowable Subject Matter

20. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The art of record does not disclose each of electronic switches is switched by an auxiliary transistor, nor would it be obvious to modify the art of record so as to include the limitation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIEN MAI whose telephone number is 571-270-1277. The examiner can normally be reached on M-Th: 7:00-5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Tien Mai/
Examiner, Art Unit 2836

/Danny Nguyen/
Primary Examiner, Art Unit 2836